CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory
An ISO 9001:2008 Certified Company
NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No: CTCE/BBMP/W.No.02/HSN/STEEL/2014-15 16.07.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	:	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the Work	:	Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	:	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Date of Test	:	16.07.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	12	0.89	515	558	13.40	O.K	O.K

Note:

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Job No: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

18.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.

Agency : **Mr. H.S. Nataraj,** Contractor, Bangalore.

Name of the work : Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014

Sample ID : RCC Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	21.07.2014	18.08.2014	8.158	475.5	21.13
2	21.07.2014	18.08.2014	8.269	490.3	21.79
3	21.07.2014	18.08.2014	8.374	512.2	22.76

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Job No.: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

20.08.2014

TEST REPORT ON CONCRETE CUBES

Client : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Agency : Mr. H.S. Nataraj, Contractor, Bangalore.

Name of the work : Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014

Sample ID : RCC Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	23.07.2014	20.08.2014	8.288	479.3	21.30
2	23.07.2014	20.08.2014	8.339	510.2	22.68
3	23.07.2014	20.08.2014	8.427	528.3	23.48

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Job No.: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

25.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.

Agency : **Mr. H.S. Nataraj,** Contractor, Bangalore.

Name of the work : Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014

Sample ID : Deck Slab Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	28.07.2014	25.08.2014	8.115	480.3	21.35
2	28.07.2014	25.08.2014	8.239	512.2	22.76
3	28.07.2014	25.08.2014	8.332	520.2	23.12

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Job No.: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

28.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.

Agency : Mr. H.S. Nataraj, Contractor, Bangalore.

Name of the work : Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014

Sample ID : Road Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	31.07.2014	28.08.2014	8.198	478.3	21.26
2	31.07.2014	28.08.2014	8.269	510.2	22.68
3	31.07.2014	28.08.2014	8.345	520.3	23.12

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Job No.: CTCE/BBMP/W.No.02/HSN/Pre Cast Slab/2014-15 31.07.2014

TEST REPORT ON CEMENT CONCRETE CORE (PRE CAST SLAB)

Name of Customer : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Name of Agency : Mr. H.S. Nataraj, Contractor, Bangalore.

Name of work : Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014

Technical Reference : IS:516-1959 (Reaffirmed 2008), SP-24:1983.

Sample ID : Pre cast slab

Date of Testing : 31.07.2014

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	80.00	0.393	2501.92	1.60	0.960	25.00	12.73	13.75	13.20	16.50
2	50.00	81.00	0.399	2508.75	1.62	0.965	26.00	13.24	14.30	13.80	17.25
3	50.00	82.00	0.410	2546.48	1.64	0.970	26.80	13.65	14.74	14.30	17.87

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Job No.: CTCE/BBMP/W.No.02/HSN/WMM/Gradation/2014-15 11.08.2014

GRADATION FOR WMM

MORTH TABLE-400-11

Client : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Agency : Mr. H.S. Nataraj, Contractor, Bangalore.

Name of Work : Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014

Date of Testing : 11.08.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7970**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	125	125	1.6	98.4	95-100
22.4	2685	2810	35.3	64.7	60-80
11.2	1310	4120	51.7	48.3	40-60
4.75	1020	5140	64.5	35.5	25-40
2.36	995	6135	77.0	23.0	15-30
0.600	850	6985	87.6	12.4	8-22
0.075	685	7670	96.2	3.8	0-8

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Lab No: CTCE/BBMP/W.No.02/HSN/WMM/AIV/2014-15

11.08.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the Work	Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	11.08.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	304	
4	Aggregate Impact value = percent fines	21.85	22.05	
	$100^* (W_2/W_1)$%			21.95

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No : CTCE/BBMP/W No.02/YSN/WMM/S-1/2014-15 11.08.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of Work	Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	11.08.2014

Result : Flakiness Index = 11.52%

Elongation Index = 13.26%

Result : Combined Flakiness & Elongation Index 24.78%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No: CTCE/BBMP/W.No.02/HSN/SDBC(QB)/2014-15

16.08.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
AGENCY	:	Mr. H.S. Nataraj, Contractor, Bangalore.
NAME OF THE WORK	:	Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	16.08.2014

The results of the tests conducted on the bitumen sample:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	88	80 to 100
2	Softening point, °C	IS :1205 -1978 (RA-2009)	46	Min. 40
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	298	Min. 220

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Lab No: CTCE/BBMP/W.No.02/HSN/SDBC/AIV/2014-15

16.08.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	Providing Asphaluing to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	16.08.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	388	389	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	303	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.91	22.11	22.01

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Comments:

–» Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.02/HSN/SDBC/Shape_T/2014-15 : 16.08.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	: **Mr.** H.S. Nataraj, Contractor, Bangalore.
Name of Work	: Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Technical Reference	: IS 2386(Part I) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 16.08.2014

Result : Flakiness Index = 11.25%

Elongation Index = 13.85%

Result : Combined Flakiness & Elongation index 25.10%

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No: CTCE/BBMP/WNo.02/YSN/SDBC/Stripping/2014-15 18.08.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor. Bangalore.
Name of the work	Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	18.08.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.40	96.60
2	3.4		
3	3.5		

Comments:
→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No: CTCE/BBMP/W.No.02/HSN/SDBC/AGG/2014-15 18.08.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the Work	Providing Asphalting to AD Colony Main Road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/04/2014-15 Dated: 10.07.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	18.08.2014

Total Weight of Sample: 5200 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	425	8.2	8.17	91.83	90-100	
4.75	2485	47.8	55.96	44.04	35-51	
2.36	690	13.3	69.23	30.77	24-39	
1.18	490	9.4	78.65	21.35	15-30	
0.3	325	6.3	84.90	15.10	9-19	
0.075	485	9.3	94.23	5.77	3-8	

Total Weight of Sample: 5300 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	415	7.8	7.83	92.17	90-100	
4.75	2650	50.0	57.83	42.17	35-51	
2.36	785	14.8	72.64	27.36	24-39	
1.18	455	8.6	81.23	18.77	15-30	
0.3	365	6.9	88.11	11.89	9-19	
0.075	325	6.1	94.23	5.75	3-8	

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